

REMARKS

A. Claims

No claims have been amended. Claims 1-26 are pending.

B. 35 U.S.C. §102 Rejections

The Examiner has rejected claims 1, 2, 5, 7, 8, 12-14, 17, 19, 20, and 23-26 under 35 U.S.C. §102(e) as being anticipated by Gudaz et al (U.S. Pat. No. 6,510,353) (hereinafter “Gudaz”). Applicant respectfully disagrees with these rejections.

Gudaz does not disclose, teach, or suggest “displaying at least one graphical user input (GUI) element for specifying a desired performance characteristic of a PID controller (emphasis added)” as recited in claim 1. The Examiner cites Gudaz, FIG. 7 for this teaching. However, Applicant respectfully asserts Gudaz does not display a GUI element for specifying a desired performance characteristic. Gudaz states:

According to the invention, the routine 100 determines a plurality of sets of tuning parameters for use in tuning the selected controller and the corresponding robustness qualities of the control loop having a controller tuned using these tuning parameters to create or identify the stable region 107 within the robustness map 106. Thereafter, the routine 100 may enable a user to select a point on the robustness map 106 and determine, from the selected point and the stored tuning parameters for other points on the robustness map 106, a further set of tuning parameters that will create a controller of the selected type which results in a control loop having the robustness qualities associated with the selected point. (Gudaz, col. 20, lines 12-24).

Gudaz specifically states that the user selects a point on a robustness map, and the routine 100, based on the selected robustness point and stored tuning parameters, determines “a further set of tuning parameters.” The user may then “repeat the steps of selecting a point within the robustness map 106 to determine a new set of tuning parameters...” (Gudaz,

col. 20, lines 28-30).” A user of Gudaz’s system cannot specify a performance characteristic, only a robustness point. Gudaz does not teach a GUI for specifying a desired performance characteristic as recited in claim 1.

The Examiner further points to Gudaz, col. 25, lines 15-20:

The range of the integral and derivative weighting factors to be used in the robustness map may be determined in any desired manner. For example, these ranges may be set or predetermined, may be input by the user or may be calculated based on the structure of the PID controller and the process characteristics. (Gudaz, col. 25, lines 15-20).

Applicant respectfully notes, however, that Gudaz here is teaching the setting of a range for a robustness map. The user must then find a desirable set of tuning parameters through trial and error selections on the robustness map. (e.g., see Gudaz, col. 20, lines 12-38).

Furthermore, Gudaz does not disclose, teach, or suggest “the desired performance characteristic indicates a desired operation of the PID controller after execution of the autotuning algorithm, and wherein the desired operation includes one or more of stiffness and response time (emphasis added)” as recited in claim 1. Gudaz teaches selecting a point on robustness map, not indicating stiffness or response time. Furthermore, inputting the integral or derivative weighting factors in a PID controller as taught by Gudaz is not the same as indicating stiffness and/or response time. For example, inputting integral and/or derivative weighting factors is not as intuitive to a user as indicating stiffness and/or response time (especially if the user is unfamiliar with PID controllers). Allowing a user to indicate stiffness or response time as specified in claim 1 allows even a user with little or no training in PID controllers to achieve desired tuning results and does not require the iterative tuning parameter search as taught by Gudaz.

Applicant respectfully reminds the Examiner that the standard for “anticipation” is one of fairly strict identity. To anticipate a claim of a patent, a single prior source must contain all the claimed essential elements. (emphasis added) *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 U.S.P.Q. 81, 91 (Fed.Cir. 1986); *In re Donahue*, 766 F.2d 531, 226 U.S.P.Q. 619, 621 (Fed.Cir. 1985).

Because Gudaz does not disclose, teach, or suggest all of the claimed essential elements, Applicant respectfully requests the Examiner withdraw the rejection to claims 1 and claims dependent thereon. Claims 12, 19, 25, and 26 recite, among others, similar limitations not disclosed, taught, or suggested by Gudaz. Applicant respectfully requests the Examiner withdraw the rejections to claims 12, 19, 25, 26, and claims dependent thereon.

Applicant also submits that independent claims 1, 12, 19, 25, and 26 are further non-obvious over the cited art for similar reasons as stated above.

C. 35 U.S.C. §103 Rejections

The Examiner has rejected claims 6 and 15 under 35 U.S.C. §103(a) as being unpatentable over Gudaz in view of Kennedy et al. (U.S. Pat. No. 5,832,532) (hereinafter “Kennedy”). Applicant respectfully disagrees with these rejections. Applicant asserts claims 6 and 15, dependent on patentably distinct claims 1 and 12, respectively, are allowable for at least the above reasons.

The Examiner has rejected claims 9 and 16 under 35 U.S.C. §103(a) as being unpatentable over Gudaz in view of Molnar (U.S. Pat. No. 5,734,597) (hereinafter “Molnar”). Applicant respectfully disagrees with these rejections. Applicant asserts claims 9 and 16, dependent on patentably distinct claims 1 and 12, respectively, are allowable for at least the above reasons.

The Examiner has rejected claim 10 under 35 U.S.C. §103(a) as being obvious over Gudaz. Applicant respectfully disagrees with these rejections. Applicant asserts claim 10, dependent on patentably distinct claim 1, is allowable for at least the above reasons. Applicant also notes that the cited references do not suggest “wherein the user input determines a value d, wherein the value d indicates the desired performance characteristic” as recited in claim 10. Applicant also respectfully submits that it would not be obvious to a person of ordinary skill in the art to use a user input to determine d.

D. Dependent Claims

The office action included a rejection of claim 2 in view of the Gudaz reference. Claim 2 includes the feature of " wherein the PID controller autotuning algorithm executes according to the desired performance characteristic indicated by the user " in combination with the features of claim 1. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 2 in combination with the features of claim 1.

The office action included a rejection of claim 5 in view of the Gudaz reference. Claim 5 includes the feature of "displaying a graphical user interface on a display device, wherein the graphical user interface includes one or more user input controls which are operable to receive the user input indicating the desired performance characteristic of the PID controller autotuning algorithm" in combination with the features of claim 1. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 5 in combination with the features of claim 1.

The office action included a rejection of claim 6 in view of the Gudaz and Kennedy references. Claim 6 includes the feature of " wherein the one or more user input controls comprise one or more slider controls " in combination with the features of claim 1. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 6 in combination with the features of claim 1.

The office action included a rejection of claim 7 in view of the Gudaz reference. Claim 7 includes the feature of "wherein the one or more user input controls comprise one or more data fields; wherein the one or more data fields are operable to receive respective parameter values indicating the desired performance characteristic of the PID controller autotuning algorithm" in combination with the features of claim 1. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 7 in combination with the features of claim 1.

The office action included a rejection of claim 8 in view of the Gudaz reference. Claim 8 includes the feature of "wherein the user input comprises one or more parameter values indicating the desired performance characteristic of the PID controller autotuning algorithm; and wherein said configuring the PID controller autotuning algorithm

comprises applying the one or more parameter values to parameters of the PID controller autotuning algorithm" in combination with the features of claim 1. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 8 in combination with the features of claim 1.

The office action included a rejection of claim 9 in view of the Gudaz and Molnar references. Claim 9 includes the feature of "displaying a command line interface on a display device, wherein the command line interface is operable to receive the user input indicating the desired performance characteristic of the PID controller autotuning algorithm" in combination with the features of claim 1. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 9 in combination with the features of claim 1.

The office action included a rejection of claim 10 in view of the Gudaz reference. Claim 10 includes the feature of "wherein the user input determines a value d, wherein the value d indicates the desired performance characteristic of the PID controller autotuning algorithm; and wherein said configuring the PID controller autotuning algorithm comprises applying the value d to modified Ziegler-Nichols equations: $P = 0.7 * K_{max}$, where K_{max} is a value of P at a point of instability; $I = P / (0.5 * T)$ where T is a time corresponding to f_o , where f_o is a frequency of oscillation; $D = (1 * d + 5) * P * 0.125 * T$ where d specifies a control characteristic; and $T_d = 5 * d + 1$ where T_d is a derivative sample period" in combination with the features of claim 1. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 10 in combination with the features of claim 1.

The office action included a rejection of claim 13 in view of the Gudaz reference. Claim 13 includes the feature of "a display device coupled to the processor, wherein the display device is operable to display a user interface which is operable to receive the user input indicating a desired performance characteristic of a PID controller autotuning algorithm" in combination with the features of claim 12. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 13 in combination with the features of claim 12.

The office action included a rejection of claim 14 in view of the Gudaz reference. Claim 14 includes the feature of "wherein the user interface comprises a graphical user

interface, wherein the graphical user interface includes one or more user input controls which are operable to receive the user input indicating the desired performance characteristic of the PID controller autotuning algorithm" in combination with the features of claim 12. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 14 in combination with the features of claim 12.

The office action included a rejection of claim 15 in view of the Gudaz and Kennedy references. Claim 15 includes the feature of " wherein the one or more user input controls comprise one or more slider controls " in combination with the features of claim 12. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 15 in combination with the features of claim 12.

The office action included a rejection of claim 16 in view of the Gudaz and Molnar references. Claim 16 includes the feature of "wherein the user interface comprises a command line interface, wherein the command line interface is operable to receive the user input indicating the desired performance characteristic of the PID controller autotuning algorithm" in combination with the features of claim 12. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 16 in combination with the features of claim 12.

The office action included a rejection of claim 17 in view of the Gudaz reference. Claim 17 includes the feature of " wherein the PID controller autotuning algorithm is executable according to the desired performance characteristic indicated by the user " in combination with the features of claim 12. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 17 in combination with the features of claim 12.

The office action included a rejection of claim 20 in view of the Gudaz reference. Claim 20 includes the feature of " wherein the PID controller autotuning algorithm executes according to the desired performance characteristic indicated by the user " in combination with the features of claim 19. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 20 in combination with the features of claim 19.

The office action included a rejection of claim 23 in view of the Gudaz reference. Claim 23 includes the feature of "displaying a graphical user interface on a display

device, wherein the graphical user interface includes one or more user input controls which are operable to receive the user input indicating the desired performance characteristic of the PID controller autotuning algorithm" in combination with the features of claim 19. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 23 in combination with the features of claim 19.

The office action included a rejection of claim 24 in view of the Gudaz reference. Claim 24 includes the feature of "wherein the user input comprises one or more parameter values indicating the desired performance characteristic of the PID controller autotuning algorithm; and wherein said configuring the PID controller autotuning algorithm comprises applying the one or more parameter values to parameters of the PID controller autotuning algorithm" in combination with the features of claim 19. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 24 in combination with the features of claim 19.

E. Allowable Subject Matter

The Examiner indicated claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims. Applicant respectfully asserts claim 11 is allowable at least as dependent on patentably distinct claim 1. Applicant respectfully requests the Examiner withdraw the objection to claim 11.

F. Additional Remarks

In light of the foregoing amendments and remarks, Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5150-51300/JCH.

Also enclosed herewith are the following items:

- ☒ Return Receipt Postcard
- ☐ Petition for Extension of Time
- ☐ Request for Approval of Drawing Changes
- ☐ Notice of Change of Address
- ☐ Check in the amount of \$ for fees ().
- ☐ Other:

Respectfully submitted,



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